A SUBSTITUTE FOR EUPARAL

In his original paper (La Cellule, 23, 427, 1906) Professor Gilson omitted the method of preparing this medium because of its difficulties and referred the matter to Grübler and Holborn. Under present circumstances it will perhaps not be a breach of etiquette to submit a method which yields a medium with similar index and properties. According to Gilson, Euparal is a solution of Sandarac in a mixture of Eucalyptol, Paraldehyde, and Camsal.

Paraldehyde and eucalyptol can be purchased of any chemist's supply house. They should be dry and neutral. If purchased from the druggist, who will probably substitute oil of eucalyptus, they should be redistilled, reserving the fraction, 119° to 124° for paraldehyde, and 175-177° for eucalyptol. The druggist's stock is in both cases about one-third something else.

Camsal is made by taking three parts of salol and two parts of camphor, and warming gently until completely liquid. Thereafter the mixture remains liquid, but should be kept well stoppered.

Sandarac as purchased is full of dust and ants. It may be purified as follows: 30 grams of sandarac are placed in a 200 cc. flask and 150 cc. of absolute alcohol added. Let stand with occasional shaking until dissolved. This mixture is rather sensitive to water vapor from the air and should be handled accordingly. Filter the solution thru a good filter paper into a 300 cc. flask. This is best done by resting the short funnel in the neck of the receiving flask and covering the whole with a bell jar under which some anhydrous calcium chloride is placed. Filtration is much more rapid than Mayer's albumin. The receiving flask is now fitted with a two-hole stopper. Thru one hole passes a glass tube in which a cotton filter has been placed; to catch dust, the rubber connections must of course be clean. This filter is connected to a calcium chloride drying tower to remove water vapor. The other hole is connected thru a receiving flask, if the alcohol is to be recovered, and thence to an aspirator. Air is passed while the solution of gum is warmed gently to 50-60°. Do not bubble air thru the solution, that being unnecessary and injurious. As the solution becomes thicker the temperature may be slowly raised to 70° and finally to 80° to remove the last of the alcohol. When the gum is moderately brittle on cooling the operation is ended.

To the gum in the same flask, add 20 cc. Eucalyptol, 10 cc. Paraldehyde, 10 cc. Camsal, cork and warm gently until a homogeneous solu-

tion is obtained. This gives a medium with an index n=1.483 to 1.486. The index can be raised or lowered slightly by varying the proportions used in making the solvent. Thus, the indices of the ingredients are about: Eucalyptol 1.456; Paraldehyde 1.39, this varies with the preparation used; Camsal 1.534; Sandarac 1.525. The essence d'euparal is, of course, the solvent mixture used above. The green tint mentioned by Gilson as due to a certain copper salt is probably copper abietinate which can be had of Merck or can be made of sufficient purity by any student in the organic chemistry laboratory.

In my experience there is less difficulty in preparing this medium than with some of the staining mixtures. It takes time but also little attention. Slides mounted several months ago are in excellent condition and as near as one can judge the medium acts like Euparal. Sections can be mounted from 80% alcohol, either with or without passing thru the essence.

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CHROMOSOMES OF RANATRA SP?

During the summer of 1914 while working on the male germ cells of another type, I prepared and sectioned some testes from a species of *Ranatra* collected about Madison, Wis. The large number of chromosomes together with what seemed to be a very puzzling polymorphism of spermatocytes induced me to defer a further investigation till a later time. Recently the work upon this form has been resumed and has progressed to a point where a preliminary and tentative statement may be made.

The testes in the later nymph stages are especially valuable for sectioning as they present in many cases the whole history of the germ cells from the last spermatogonial divisions to mature spermatozoa. Sex organs from adults collected in the spring, and up to mid-summer are also generally favorable, but specimens taken in late summer and fall show very few division stages.

My first material was composed of several testes from animals collected in mid-summer and at that time believed to belong to but one species. All of these were prepared together for study. Observations